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*Emerging Infectious Diseases*

# Imported Cholera Associated with a Newly Described Toxigenic *Vibrio cholerae* O139 Strain — California, 1993

Epidemics of cholera-like illness caused by a previously unrecognized organism occurred recently in southern Asia (*1*). This report documents the first case of cholera imported into the United States that was caused by this organism, the newly described toxigenic *Vibrio cholerae* O139 strain.

On February 5, 1993, a 48-year-old female resident of Los Angeles County sought care at a local outpatient health-care facility for acute onset of watery diarrhea and back pain. A few hours before seeking medical care, she had returned to the United States from a 6-week visit with relatives in Hyderabad, India.

Her diarrheal illness began in India on February 4 and increased in severity while she traveled to the United States. She reported a maximum of 10 watery stools per day but no vomiting, visible blood or mucous in her stools, or documented fever. The patient was prescribed trimethoprim-sulfamethoxazole without rehydration treatment and recovered uneventfully. Duration of illness was approximately 4 days. No secondary illness occurred among family members.

When the patient sought medical care, the physician suspected cholera, and a culture of a stool specimen obtained from the patient at that time yielded colonies suspected of being *V. cholerae*. This was confirmed by the Los Angeles County Public Health Laboratory. The isolate was identified as *V. cholerae* non-O1. The isolate produced cholera toxin by Y-1 adrenal cell assay and latex agglutination in the California State Public Health Laboratory. Testing at CDC identified the isolate as toxigenic *V. cholerae* serogroup O139, resistant to trimethoprim-sulfamethoxazole.

Before this illness, the patient had been in good health. In Hyderabad, she stayed with relatives and did not travel outside the city. Although the source of her infection was not confirmed, on January 30, the patient had eaten fried shrimp and prawns purchased from a local market and prepared by relatives. She also recalled drinking a half glass of unbottled water in Hyderabad on February 3.

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*Imported Cholera — Continued*

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**Editorial Note:** In October 1992, an epidemic of cholera-like illness began in Madras, India, associated with an atypical strain of *V. cholerae* (*2*). In early 1993, similar epidemics began in Calcutta (with more than 13,000 cases) and in Bangladesh (with more than 10,000 cases and 500 deaths) caused by similarly atypical strains of *V. cholerae* (*3,4*). These strains could not be identified as any of the 138 known types of *V. cholerae* and have been designated as a new serogroup, O139 (*5*). Although the extent of the ongoing epidemic in southern Asia is unclear, this strain is now associated with epidemic cholera-like illness along a 1000-mile coastline of the Bay of Bengal (from Madras, India, to Bangladesh) and appears to have largely replaced *V. cholerae* O1 strains in affected areas.

The emergence of this new cause of epidemic cholera represents an important shift in the epidemiology of this infectious disease (*6*). Until 1993, the only recognized causes of epidemic cholera were *V. cholerae* strains that were part of serogroup O1. *V. cholerae* isolates from other serogroups (i.e., non-O1) were recognized as causes of sporadic diarrheal and invasive infections but were not considered to have epidemic potential. The relation of the new non-O1 serogroup to typical O1 strains is unclear; except for the presence of O1 antigen, the strains are nearly identical in most characteristics.

Descriptions of the symptoms associated with *V. cholerae* O139 infection suggest it is indistinguishable from cholera caused by *V. cholerae* O1 and should be treated with the same rapid fluid replacement (*7*). Although the illness may be severe, it is treatable with oral and intravenous rehydration therapy. The new organism has been susceptible to tetracycline, which is the recommended antibiotic for treatment of cholera. However, the organism is reportedly resistant to trimethoprim-sulfamethoxazole and furazolidone, other antibiotics used to treat cholera.

Health-care providers should consider the new strain as a possible cause of cholera-like illness in persons returning from the Indian subcontinent. Although previous cases were reported from Madras and Calcutta in India and from Bangladesh, this report suggests that Hyderabad, India—which is inland—is also affected. Because of effective sewerage and water treatment, further spread of this strain is unlikely in the United States. However, the potential for epidemic cholera caused by *V. cholerae* O139 exists for much of the developing world, and further spread to other parts of Asia is probable.

The emergence of this new strain has at least three other major public health implications. First, it expands the definition of cholera beyond the illness caused exclusively by toxigenic *V. cholerae* of serogroup O1. Because it appears to cause the same illness and to have similar epidemic potential, the World Health Organization has asked all nations to report illnesses caused by this strain as cholera (*1*). In the United States, clinicians, laboratorians, and public health authorities should report infections with toxigenic *V. cholerae* O139 as cholera, in addition to cases of toxigenic *V. cholerae* O1 infection.

Second, the rapid spread of the *V. cholerae* O139 epidemic in southern Asia, even among adults previously exposed to cholera caused by *V. cholerae* O1, suggests that preexisting immunity to toxigenic *V. cholerae* O1, whether the result of natural infection or cholera vaccine, offers little or no protective benefit. Travelers to areas affected

*Imported Cholera — Continued*

by this epidemic should exercise particular care in selecting food and drink and should not assume that cholera vaccination is protective against the *V. cholerae* O139 strain.

Third, laboratory identification methods for *V. cholerae* O1 depend on detection of the O1 antigen on the surface of the bacterium, and therefore do not identify this new strain. A specific diagnostic antiserum for *V. cholerae* O139 is being prepared for use in U.S. public health laboratories and will be distributed soon. Without such antiserum, this strain might be confused with other non-O1 *V. cholerae* isolates unrelated to the newly described O139 strain that occasionally cause infections in the United States.

In 1989, a pilot surveillance effort in four states determined that the reported infection rate for non-O1 *V. cholerae* was 1 per 1 million population (*8*). Although non-O1 strains can cause illness, non-O1 strains other than the newly described O139 have not been implicated as a cause of epidemics and are not considered a major public health problem. Accordingly, CDC recommends that:

1. Sporadic clinical isolates of non-O1 *V. cholerae* should be referred to a state public health laboratory for further characterization if there is an epidemiologic link to areas of the world known to be affected by O139 (currently India and Bangladesh); if the disease is typical of severe cholera (i.e., watery diarrhea with life-threatening dehydration); or if the isolate has been linked to an outbreak (i.e., more than one linked case) of diarrheal illness.
2. Physicians should ask that specimens from persons with suspected cholera be cultured on thiosulfate-citrate-bile salts-sucrose (TCBS) medium for isolation of *V. cholerae*. *All* cases of suspected cholera should be reported immediately to local and state health departments.

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*Progress in Chronic Disease Prevention*

## Smoking Cessation During Previous Year Among Adults — United States, 1990 and 1991

Although most smokers in the United States report that they want to stop using cigarettes (*1*), 46 million persons aged ≥18 years continue to smoke (*2*). Current information about factors predictive of smoking or cessation is required to develop and assess measures effective in reducing smoking prevalence. To characterize the patterns of attempting to quit smoking and smoking cessation among U.S. adults during 1990 and 1991, CDC's National Health Interview Survey–Health Promotion and Disease Prevention (NHIS–HPDP) supplement collected self-reported information on cigarette smoking from a representative sample of the U.S. civilian, noninstitutionalized population aged ≥18 years. This report summarizes findings from this survey.

The overall response rate for the 1991 NHIS–HPDP was 87.8%. Participants (n=43,732) were asked: "Have you smoked at least 100 cigarettes in your entire life?" Those who responded "yes" (i.e., ever smokers) were asked: "Around this time last year, were you smoking cigarettes every day, some days, or not at all?" They were then asked: "Do you smoke cigarettes now?" Those who responded "yes" were asked: "Do you now smoke cigarettes every day or some days?"; those who responded "no" were asked: "Do you now smoke cigarettes not at all or some days?" The time period from the reference time 1 year earlier (about which the ever smoker reported the frequency of smoking) to the date of interview was considered the study period.

Current every-day smokers were persons who stated that they smoked now and that they smoked every day. Those who stated that they did not smoke at all at the time of the survey were considered former smokers. Some-day smokers were those who smoked on some days. These definitions differ slightly from traditional definitions used by CDC's National Center for Health Statistics because they incorporate the concepts of every-day and some-day smoking. Current every-day smokers who stated that they quit for at least 1 day during the past year, some-day smokers, and former smokers were all considered to have been abstinent from smoking for at least 1 day during the study period. Those former smokers who quit smoking cigarettes for at least 1 month at the time of the survey in 1991 were considered to have maintained abstinence.

For this analysis, three racial/ethnic categories were used: white, non-Hispanic; black, non-Hispanic; and Hispanic. Other racial/ethnic groups were not included because numbers were too small for meaningful analysis. Data were adjusted for nonresponse and weighted to provide national estimates. Investigators used the Software for Survey Data Analysis (SUDAAN) to calculate 95% confidence intervals (CIs) and adjusted odds ratios (*3*).

Among U.S. adults who had smoked at least 100 cigarettes during their lifetimes as of 1991, an estimated 40.5 million smoked cigarettes every day at the beginning of the study period. Approximately 17.0 million (42.1%) of these did not smoke cigarettes for at least 1 day during the subsequent 12 months. Hispanics (52.1% [95% CI=46.4%–57.8%]) and blacks (48.7% [95% CI=45.2%–52.2%]) were more likely than whites (40.3% [95% CI=39.0%–41.6%]) to quit smoking cigarettes for at least 1 day. Abstinence

*Smoking Cessation — Continued*

for at least 1 day, by age, was highest among persons aged 18–24 years (56.7% [95% CI=52.9%–60.5%]) and, by education, was lowest among those with <12 years of education (36.5% [95% CI=34.1%–38.9%]). These relations were also evident after statistical adjustment was made for other sociodemographic variables (Table 1).

Among persons who reported that they did not smoke cigarettes for at least 1 day during the previous year, 13.8% (2.3 million) were abstinent for 1 month or more at the end of the study period. Hispanics (16.3% [95% CI=10.3%–22.2%]) and whites (14.0% [95% CI=12.6%–15.4%]) were more likely than blacks (7.9% [95% CI=5.1%–10.7%]) to remain abstinent; this difference remained after statistical adjustments were made for sex, age, education, and poverty status (Table 1). Persons aged ≥65 years (19.4% [95% CI=14.6%–24.2%]) and college graduates (18.8% [95% CI=14.9%–22.7%]) were the most likely to maintain abstinence. Persons at or above the poverty level* (14.8% [95% CI=13.4%–16.3%]) were more likely to maintain abstinence than those below the poverty level (7.5% [95% CI=4.7%–10.3%]).

Of all persons who were daily smokers at the beginning of the study period, 5.7% quit smoking and maintained abstinence for at least 1 month. Among persons who were daily smokers at the beginning of the study period, college graduates and persons at or above the poverty level were more likely than those with fewer years of formal education and persons below the poverty level, respectively, to abstain from cigarette smoking for 1 month or more.

*Reported by: Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion; Div of Health Interview Statistics, National Center for Health Statistics, CDC.*

**Editorial Note**: The findings from this survey indicate that, in 1990 and 1991, approximately 42% of daily smokers abstained from smoking cigarettes for at least 1 day but that approximately 86% of these persons subsequently resumed smoking. The high relapse rate is likely because of the addictive nature of nicotine (*4*). However, because relapse occurs later in the process of maintenance, the overall rate of cessation will be lower than suggested by this report. From 1974 through 1991, an estimated 45.8–53.5 million persons aged ≥18 years smoked; of these, approximately 1.2 million persons became former smokers each year (CDC, unpublished data), suggesting that approximately 2.5% of U.S. smokers quit smoking permanently each year.

Education level and age are both important predictors for cessation attempts and maintaining abstinence. The findings in this report are consistent with previous studies noting that increasing level of education correlates directly with smoking cessation prevalence and inversely with prevalence of smoking (*2*). In addition, although persons aged ≥65 years were less likely to abstain for 1 day, those who did abstain were the most likely to be successful in maintaining abstinence during the study period. This finding may suggest that older persons may be more motivated than younger persons to overcome nicotine addiction (*5*).

In 1991, among the three racial/ethnic groups studied, the maintenance rate of abstinence from smoking was higher for Hispanics and whites than for blacks. Potential explanations for the high relapse rate among blacks include the use of cigarettes with higher tar and nicotine yields (*4*), a higher prevalence of nicotine dependency among

*Poverty statistics are based on definitions developed by the Social Security Administration that include a set of income thresholds that vary by family size and composition.

*Smoking Cessation — Continued*

persons who smoke (*6*), and comparatively limited access to preventive health services (*4,7*). Smoking-cessation programs are important for all racial/ethnic groups. Programs have been developed for Asian/Pacific Islanders, American Indians/Alaskan Natives (T. Stratton, California Department of Health Services, personal communication, 1993), and Hispanics (*8*). The elevated prevalence of cigarette smoking among (*2*) and the higher smoking-attributable death rate for (*9*) blacks indicate the need for

**TABLE 1. Adjusted odds ratios (AORs)* for three measures of abstinence from cigarette smoking during the previous year, by sex, race/ethnicity,† age group, level of education,§ and poverty status¶ — United States, National Health Interview Survey, 1991****

| | Abstinence for ≥1 day | | Maintenance among abstainers | | Maintenance†† among all persons who were daily smokers 1 year earlier | |
|---|---|---|---|---|---|---|
| Category | AOR | (95% CI§§) | AOR | (95% CI) | AOR | (95%CI) |
| **Sex** | | | | | | |
| Male | 1.0 | Referent | 1.0 | Referent | 1.0 | Referent |
| Female | 1.0 | (0.9–1.2) | 1.1 | (0.9–1.3) | 1.0 | (0.9–1.3) |
| **Race/Ethnicity** | | | | | | |
| White, non-Hispanic | 1.0 | Referent | 1.0 | Referent | 1.0 | Referent |
| Black, non-Hispanic | 1.6 | (1.3–1.8) | 0.6 | (0.4–0.9) | 0.8 | (0.5–1.2) |
| Hispanic | 1.7 | (1.3–2.1) | 1.3 | (0.9–2.1) | 1.7 | (1.1–2.7) |
| **Age group (yrs)** | | | | | | |
| 18–24 | 1.0 | Referent | 1.0 | Referent | 1.0 | Referent |
| 25–44 | 0.5 | (0.5–0.6) | 0.9 | (0.6–1.3) | 0.7 | (0.5–0.9) |
| 45–64 | 0.4 | (0.3–0.5) | 0.9 | (0.6–1.4) | 0.6 | (0.4–0.8) |
| ≥65 | 0.5 | (0.4–0.6) | 1.5 | (1.0–2.4) | 0.9 | (0.6–1.4) |
| **Education (yrs)** | | | | | | |
| <12 | 1.0 | Referent | 1.0 | Referent | 1.0 | Referent |
| 12 | 1.3 | (1.1–1.5) | 1.0 | (0.7–1.4) | 1.2 | (0.9–1.6) |
| 13–15 | 1.6 | (1.3–1.8) | 1.1 | (0.8–1.5) | 1.4 | (1.0–1.9) |
| ≥16 | 1.6 | (1.3–2.0) | 1.5 | (1.0–2.2) | 1.9 | (1.3–2.7) |
| **Poverty status** | | | | | | |
| At/above poverty level | 1.0 | Referent | 1.0 | Referent | 1.0 | Referent |
| Below poverty level | 1.0 | (0.8–1.1) | 0.5 | (0.3–0.8) | 0.5 | (0.4–0.8) |
| Unknown | 0.7 | (0.6–0.9) | 0.9 | (0.6–1.4) | 0.8 | (0.5–1.1) |

*The odds ratios presented for each sociodemographic variable are adjusted for the other four sociodemographic variables in the table.

†Excludes 268 respondents of other or unknown race; race/ethnicity and education were both unknown for four respondents.

§Excludes 24 respondents of unknown education status.

¶Poverty statistics are based on definitions developed by the Social Security Administration that include a set of income thresholds that vary by family size and composition.

**Sample size=9415.

††Abstinence from smoking cigarettes for at least 1 month preceding the interview. Excludes 92 respondents who abstained from cigarettes for <1 month or for whom duration of abstinence was unknown.

§§Confidence interval.

*Smoking Cessation — Continued*

specific efforts to reduce the adverse impact of tobacco use among blacks. CDC and the National Medical Association are initiating a targeted mass media campaign in July 1993 called "Legends" that contrasts the deaths of black civil-rights leaders to preventable smoking-related deaths. In addition, a toll-free telephone number ([800] 232-1311) is available to request a smoking-cessation guide, *Pathways to Freedom*. This guide addresses important topics including nicotine addiction, possible misconceptions about the safety of smoking menthol cigarettes, stress-reduction techniques, preparing for quitting, relapse-prevention techniques, and the cultural meaning of smoking (*6*).

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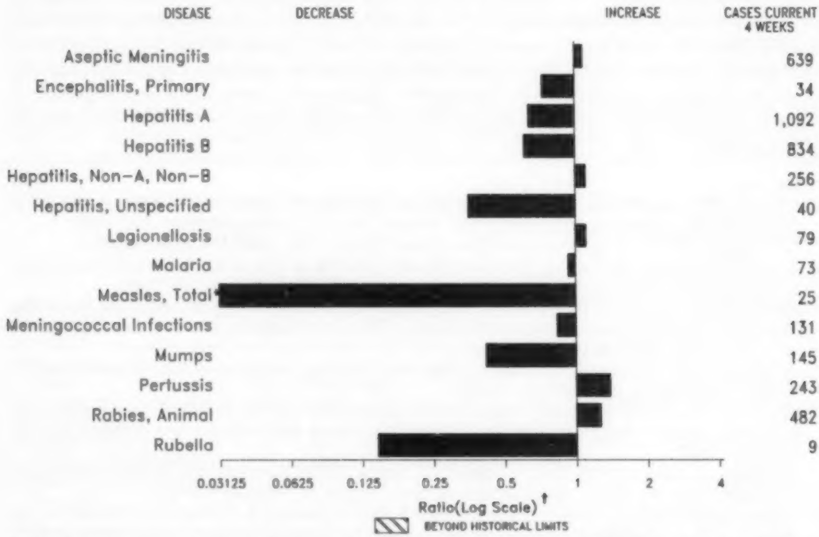
*Current Trends*

## Availability of Comprehensive Adolescent Health Services — United States, 1990

The national health objectives for the year 2000 target the reduction of behaviors that place adolescents at risk for human immunodeficiency virus (HIV) infection and other sexually transmitted diseases, unintended pregnancies, and other health problems (*1*). Although clinical preventive services are an important component of health-promotion and disease-prevention programs required to achieve these objectives (*2*), adolescents and young adults are less likely to have access to health care than younger and older persons (*2,3*). To characterize comprehensive health-service programs for adolescents (i.e., persons aged 13–19 years) and whether such programs provide targeted services to adolescents at risk for HIV infection or infected with HIV, the Center for Health Promotion and Disease Prevention at the University of North Carolina at Chapel Hill conducted a national survey of such programs in 1991. This report summarizes the results of this survey.

*(Continued on page 513)*

**FIGURE I. Notifiable disease reports, comparison of 4-week totals ending July 3, 1993, with historical data — United States**




*The large apparent decrease in reported cases of measles (total) reflects dramatic fluctuations in the historical baseline. (Ratio (log scale) for week twenty-six is 0.02918).

†Ratio of current 4-week total to mean of 15 4-week totals (from previous, comparable, and subsequent 4-week periods for the past 5 years). The point where the hatched area begins is based on the mean and two standard deviations of these 4-week totals.

**TABLE I. Summary — cases of specified notifiable diseases, United States, cumulative, week ending July 3, 1993 (26th Week)**

| | Cum. 1993 | | Cum. 1993 |
|---|---|---|---|
| AIDS* | 59,979 | Measles: imported | 17 |
| Anthrax | - | indigenous | 150 |
| Botulism: Foodborne | 7 | Plague | 3 |
| Infant | 12 | Poliomyelitis, Paralytic§ | - |
| Other | 2 | Psittacosis | 29 |
| Brucellosis | 38 | Rabies, human | - |
| Cholera | 14 | Syphilis, primary & secondary | 13,163 |
| Congenital rubella syndrome | 5 | Syphilis, congenital, age < 1 year | - |
| Diphtheria | - | Tetanus | 15 |
| Encephalitis, post-infectious | 86 | Toxic shock syndrome | 120 |
| Gonorrhea | 188,249 | Trichinosis | 8 |
| *Haemophilus influenzae* (invasive disease)† | 647 | Tuberculosis | 9,855 |
| Hansen Disease | 88 | Tularemia | 55 |
| Leptospirosis | 17 | Typhoid fever | 151 |
| Lyme Disease | 2,054 | Typhus fever, tickborne (RMSF) | 84 |

*Updated monthly; last update July 3, 1993.
†Of 591 cases of known age, 196 (33%) were reported among children less than 5 years of age.
§No cases of suspected poliomyelitis have been reported in 1993; 4 cases of suspected poliomyelitis were reported in 1992; 6 of the 9 suspected cases with onset in 1991 were confirmed; the confirmed cases were vaccine associated.

**TABLE II. Cases of selected notifiable diseases, United States, weeks ending July 3, 1993, and June 27, 1992 (26th Week)**

| Reporting Area | AIDS* | Aseptic Meningitis | Encephalitis | | Gonorrhea | | Hepatitis (Viral), by type | | | | Legionellosis | Lyme Disease |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Primary | Post-infectious | | | A | B | NA,NB | Unspecified | | |
| | Cum. 1993 | Cum. 1993 | Cum. 1993 | Cum. 1993 | Cum. 1993 | Cum. 1992 | Cum. 1993 | Cum. 1993 | Cum. 1993 | Cum. 1993 | Cum. 1993 | Cum. 1993 |
| UNITED STATES | 59,979 | 3,492 | 261 | 86 | 188,249 | 244,642 | 10,219 | 5,800 | 2,274 | 304 | 551 | 2,054 |
| NEW ENGLAND | 2,815 | 52 | 4 | 4 | 3,902 | 5,070 | 154 | 159 | 226 | 5 | 14 | 316 |
| Maine | 60 | 10 | 1 | - | 42 | 48 | 8 | 9 | - | - | 4 | 3 |
| N.H. | 66 | 9 | - | 2 | 31 | 63 | 13 | 45 | 205 | 1 | 1 | 24 |
| Vt. | 14 | 7 | 2 | - | 14 | 14 | 3 | 3 | 2 | - | - | 1 |
| Mass. | 1,491 | 11 | 1 | 2 | 1,309 | 1,856 | 47 | 59 | 15 | 4 | 5 | 20 |
| R.I. | 192 | 15 | - | - | 185 | 378 | 49 | 14 | 4 | - | 4 | 61 |
| Conn. | 992 | - | - | - | 2,321 | 2,711 | 34 | 29 | - | - | - | 207 |
| MID. ATLANTIC | 13,675 | 320 | 13 | 6 | 20,590 | 26,198 | 597 | 747 | 164 | 4 | 114 | 1,359 |
| Upstate N.Y. | 2,162 | 131 | 6 | 3 | 4,037 | 5,675 | 184 | 204 | 94 | 1 | 35 | 984 |
| N.Y. City | 7,455 | 104 | 1 | - | 5,067 | 8,844 | 177 | 121 | 1 | - | 3 | 3 |
| N.J. | 2,561 | - | - | - | 3,509 | 3,661 | 160 | 210 | 49 | - | 16 | 137 |
| Pa. | 1,497 | 85 | 6 | 3 | 7,977 | 8,018 | 76 | 212 | 20 | 3 | 60 | 235 |
| E.N. CENTRAL | 4,967 | 455 | 77 | 15 | 37,417 | 45,544 | 994 | 595 | 361 | 8 | 152 | 19 |
| Ohio | 809 | 145 | 26 | 3 | 10,015 | 13,732 | 161 | 121 | 29 | - | 75 | 15 |
| Ind. | 585 | 67 | 6 | 7 | 3,787 | 4,165 | 420 | 117 | 6 | 1 | 32 | 1 |
| Ill. | 1,776 | 87 | 16 | - | 12,862 | 14,604 | 293 | 123 | 21 | 2 | 5 | 1 |
| Mich. | 1,290 | 146 | 25 | 5 | 8,085 | 10,947 | 114 | 229 | 284 | 5 | 32 | 2 |
| Wis. | 507 | 10 | 4 | - | 2,668 | 2,096 | 6 | 5 | 21 | - | 8 | - |
| W.N. CENTRAL | 2,274 | 208 | 11 | - | 10,006 | 13,000 | 1,291 | 350 | 101 | 6 | 37 | 39 |
| Minn. | 480 | 47 | 5 | - | 1,242 | 1,523 | 207 | 32 | 3 | 4 | 1 | 4 |
| Iowa | 131 | 45 | 1 | - | 602 | 889 | 18 | 12 | 4 | 1 | 5 | 5 |
| Mo. | 1,292 | 49 | - | - | 5,651 | 7,111 | 832 | 260 | 75 | 1 | 11 | 7 |
| N. Dak. | - | 5 | 2 | - | 25 | 47 | 49 | - | - | - | 1 | 1 |
| S. Dak. | 21 | 7 | 3 | - | 149 | 87 | 10 | - | - | - | - | - |
| Nebr. | 120 | 4 | - | - | 476 | 754 | 116 | 8 | 9 | - | 16 | 2 |
| Kans. | 230 | 51 | - | - | 1,861 | 2,589 | 59 | 38 | 10 | - | 3 | 20 |
| S. ATLANTIC | 12,950 | 860 | 46 | 38 | 51,292 | 76,115 | 647 | 1,071 | 278 | 42 | 92 | 243 |
| Del. | 235 | 18 | 3 | - | 669 | 883 | 7 | 77 | 63 | - | 7 | 120 |
| Md. | 1,425 | 71 | 11 | - | 8,022 | 7,304 | 87 | 143 | 7 | 5 | 23 | 36 |
| D.C. | 774 | 19 | - | - | 2,761 | 3,579 | 3 | 14 | - | - | 12 | 2 |
| Va. | 899 | 85 | 15 | 3 | 5,684 | 9,041 | 71 | 76 | 20 | 16 | 2 | 25 |
| W. Va. | 46 | 7 | 7 | - | 288 | 451 | 4 | 18 | 16 | - | 1 | 2 |
| N.C. | 742 | 65 | 9 | - | 12,420 | 12,362 | 31 | 164 | 31 | - | 14 | 34 |
| S.C. | 854 | 5 | - | - | 4,842 | 5,631 | 7 | 18 | - | 1 | 10 | 1 |
| Ga. | 1,061 | 62 | 1 | - | 4,660 | 23,945 | 60 | 36 | 22 | - | 12 | - |
| Fla. | 6,314 | 528 | - | 35 | 11,946 | 12,919 | 377 | 525 | 119 | 20 | 11 | 21 |
| E.S. CENTRAL | 1,588 | 191 | 9 | 4 | 21,223 | 23,944 | 123 | 616 | 444 | 1 | 22 | 8 |
| Ky. | 185 | 73 | 4 | 4 | 2,288 | 2,472 | 64 | 47 | 6 | - | 8 | 2 |
| Tenn. | 640 | 29 | 4 | - | 6,453 | 7,577 | 24 | 510 | 430 | - | 11 | 4 |
| Ala. | 490 | 57 | 1 | - | 7,418 | 8,152 | 25 | 56 | 3 | 1 | 1 | 2 |
| Miss. | 273 | 32 | - | - | 5,066 | 5,743 | 10 | 3 | 5 | - | 2 | - |
| W.S. CENTRAL | 6,332 | 307 | 20 | - | 22,202 | 25,283 | 935 | 774 | 111 | 83 | 15 | 10 |
| Ark. | 248 | 21 | - | - | 4,314 | 4,214 | 27 | 32 | 2 | 1 | - | 1 |
| La. | 806 | 27 | 1 | - | 5,884 | 6,449 | 39 | 101 | 38 | 2 | 2 | - |
| Okla. | 542 | 1 | 4 | - | 1,869 | 2,487 | 63 | 126 | 33 | 6 | 9 | 5 |
| Tex. | 4,736 | 258 | 15 | - | 10,135 | 12,133 | 806 | 515 | 38 | 74 | 4 | 4 |
| MOUNTAIN | 2,789 | 209 | 13 | 4 | 5,437 | 6,146 | 2,083 | 289 | 154 | 51 | 48 | 4 |
| Mont. | 17 | - | - | 1 | 22 | 56 | 54 | 4 | - | - | 5 | - |
| Idaho | 40 | 6 | - | - | 87 | 61 | 95 | 23 | - | 1 | 1 | - |
| Wyo. | 30 | 3 | - | - | 41 | 25 | 10 | 13 | 45 | - | 5 | 2 |
| Colo. | 925 | 44 | 3 | - | 1,670 | 2,294 | 523 | 32 | 27 | 31 | 4 | - |
| N. Mex. | 220 | 43 | 3 | 2 | 471 | 451 | 178 | 120 | 50 | 2 | 3 | 1 |
| Ariz. | 956 | 79 | 5 | - | 2,045 | 2,056 | 711 | 49 | 9 | 7 | 9 | - |
| Utah | 195 | 7 | 1 | - | 170 | 140 | 466 | 23 | 19 | 10 | 7 | 1 |
| Nev. | 397 | 27 | 1 | 1 | 931 | 1,063 | 46 | 25 | 4 | - | 14 | - |
| PACIFIC | 12,589 | 890 | 68 | 15 | 16,180 | 23,342 | 3,395 | 1,199 | 435 | 104 | 57 | 56 |
| Wash. | 882 | - | - | - | 1,927 | 2,114 | 375 | 105 | 94 | 7 | 8 | 1 |
| Oreg. | 522 | - | - | - | 940 | 780 | 54 | 21 | 8 | - | - | - |
| Calif. | 11,030 | 832 | 65 | 15 | 12,825 | 19,829 | 2,483 | 1,057 | 324 | 94 | 44 | 54 |
| Alaska | 20 | 6 | 2 | - | 237 | 368 | 435 | 6 | 7 | - | - | - |
| Hawaii | 135 | 52 | 1 | - | 251 | 251 | 48 | 10 | 2 | 3 | 5 | 1 |
| Guam | - | 2 | - | - | 38 | 41 | 2 | 2 | - | 1 | - | - |
| P.R. | 1,786 | 29 | - | - | 217 | 91 | 38 | 189 | 22 | 2 | - | - |
| V.I. | 33 | - | - | - | 61 | 54 | - | 2 | - | - | - | - |
| Amer. Samoa | - | - | - | - | 22 | 20 | 10 | - | - | - | - | - |
| C.N.M.I. | - | 2 | - | - | 45 | 32 | - | - | - | 1 | - | - |

N: Not notifiable U: Unavailable C.N.M.I.: Commonwealth of Northern Mariana Islands

*Updated monthly; last update July 3, 1993.

**TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending July 3, 1993, and June 27, 1992 (26th Week)**

| Reporting Area | Malaria | Measles (Rubeola) Indigenous | | Imported* | | Total | Meningococcal Infections | Mumps | | Pertussis | | | Rubella | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cum. 1993 | 1993 | Cum. 1993 | 1993 | Cum. 1993 | Cum. 1992 | Cum. 1993 | 1993 | Cum. 1993 | 1993 | Cum. 1993 | Cum. 1992 | 1993 | Cum. 1993 | Cum. 1992 |
| UNITED STATES | 486 | 2 | 150 | - | 17 | 1,979 | 1,323 | 30 | 923 | 62 | 1,301 | 816 | 5 | 113 | 105 |
| NEW ENGLAND | 24 | - | 42 | - | 2 | 50 | 57 | - | 5 | 3 | 298 | 76 | - | 1 | 6 |
| Maine | 1 | - | - | - | - | - | 5 | - | - | - | 8 | 3 | - | 1 | 1 |
| N.H. | 5 | - | - | - | - | 12 | 12 | - | - | 3 | 195 | 22 | - | - | - |
| Vt. | 1 | - | 30 | - | 1 | - | 4 | - | - | - | 42 | 2 | - | - | - |
| Mass. | 2 | - | 3 | - | - | 14 | 17 | - | - | - | 19 | 35 | - | - | - |
| R.I. | 2 | - | - | - | 1 | 20 | 1 | - | 2 | - | 2 | - | - | - | 4 |
| Conn. | 13 | - | 9 | - | - | 4 | 18 | - | 3 | - | 32 | 14 | - | - | 1 |
| MID. ATLANTIC | 88 | - | 6 | - | 2 | 187 | 169 | 12 | 74 | 13 | 189 | 52 | 4 | 30 | 9 |
| Upstate N.Y. | 31 | - | - | - | 1 | 108 | 78 | 2 | 26 | 3 | 80 | 24 | 1 | 5 | 7 |
| N.Y. City | 24 | - | 2 | - | - | 43 | 19 | - | - | - | 7 | 9 | - | 15 | - |
| N.J. | 25 | - | 4 | - | 1 | 36 | 23 | - | 8 | - | 21 | 19 | - | 6 | 2 |
| Pa. | 8 | - | - | - | - | - | 49 | 10 | 40 | 10 | 81 | - | 3 | 4 | - |
| E.N. CENTRAL | 29 | - | 1 | - | - | 36 | 190 | 2 | 135 | 10 | 187 | 75 | - | 1 | 7 |
| Ohio | 6 | - | - | - | - | 5 | 60 | 2 | 57 | 8 | 119 | 23 | - | 1 | - |
| Ind. | 4 | - | - | - | - | 20 | 32 | - | 3 | 2 | 28 | 12 | - | - | - |
| Ill. | 14 | - | 1 | - | - | 8 | 57 | - | 29 | - | 19 | 12 | - | - | 7 |
| Mich. | 5 | - | - | - | - | 2 | 40 | - | 46 | - | 18 | 3 | - | - | - |
| Wis. | - | - | - | - | - | 1 | 1 | - | - | - | 3 | 25 | - | - | - |
| W.N. CENTRAL | 15 | - | 1 | - | 2 | 8 | 84 | 1 | 27 | 4 | 93 | 57 | - | 1 | 5 |
| Minn. | 3 | - | - | - | - | 7 | 2 | - | - | - | 43 | 18 | - | - | - |
| Iowa | 1 | - | - | - | - | 1 | 15 | - | 7 | - | 1 | 1 | - | - | - |
| Mo. | 3 | - | 1 | - | - | - | 34 | 1 | 15 | 4 | 29 | 24 | - | 1 | 1 |
| N. Dak. | 2 | - | - | - | - | - | 3 | - | 4 | - | 3 | 7 | - | - | - |
| S. Dak. | 2 | - | - | - | - | - | 3 | - | - | - | 1 | 4 | - | - | - |
| Nebr. | 3 | - | - | - | - | - | 6 | - | 1 | - | 5 | 2 | - | - | - |
| Kans. | 1 | - | - | - | 2 | - | 21 | - | - | - | 11 | 1 | - | - | 4 |
| S. ATLANTIC | 140 | - | 20 | - | 3 | 113 | 268 | 12 | 301 | 11 | 140 | 63 | - | 8 | 7 |
| Del. | 1 | - | 3 | - | - | 1 | 11 | - | 4 | 1 | 2 | - | - | 2 | - |
| Md. | 14 | - | - | - | 2 | 16 | 25 | 2 | 52 | 4 | 45 | 12 | - | 2 | 4 |
| D.C. | 5 | - | - | - | - | - | 4 | - | - | - | 2 | - | - | - | - |
| Va. | 10 | - | - | - | 1 | 11 | 25 | - | 16 | 4 | 17 | 4 | - | - | - |
| W. Va. | 2 | - | - | - | - | - | 11 | - | 6 | - | 6 | 2 | - | - | - |
| N.C. | 78 | - | - | - | - | 24 | 47 | 10 | 177 | 1 | 24 | 14 | - | - | - |
| S.C. | - | - | - | - | - | 29 | 20 | - | 14 | - | 5 | 7 | - | - | - |
| Ga. | 3 | - | - | - | - | - | 57 | - | 9 | - | 5 | 8 | - | - | - |
| Fla. | 27 | - | 17 | - | - | 32 | 66 | - | 23 | 1 | 34 | 16 | - | 4 | 3 |
| E.S. CENTRAL | 12 | - | 1 | - | - | 450 | 84 | - | 33 | 3 | 61 | 14 | - | - | 1 |
| Ky. | - | - | - | - | - | 433 | 17 | - | - | - | 3 | - | - | - | - |
| Tenn. | 7 | - | - | - | - | - | 18 | - | 10 | - | 33 | 5 | - | - | 1 |
| Ala. | 3 | - | 1 | - | - | - | 30 | - | 18 | 3 | 23 | 8 | - | - | - |
| Miss. | 2 | - | - | - | - | 17 | 19 | - | 5 | - | 2 | 1 | - | - | - |
| W.S. CENTRAL | 11 | - | 1 | - | - | 1,031 | 116 | - | 132 | 1 | 33 | 111 | - | 12 | 6 |
| Ark. | 2 | - | - | - | - | - | 13 | - | 4 | 1 | 3 | 6 | - | - | - |
| La. | - | - | 1 | - | - | - | 25 | - | 11 | - | 5 | - | - | 1 | - |
| Okla. | 4 | - | - | - | - | 11 | 10 | - | 7 | - | 12 | 13 | - | 1 | - |
| Tex. | 5 | - | - | - | - | 1,020 | 68 | - | 110 | - | 13 | 92 | - | 10 | 6 |
| MOUNTAIN | 14 | - | 2 | - | - | 13 | 114 | - | 35 | 10 | 97 | 134 | - | 4 | 4 |
| Mont. | 2 | - | - | - | - | - | 11 | - | - | - | - | 1 | - | - | - |
| Idaho | 1 | - | - | - | - | - | 7 | - | 5 | 2 | 19 | 17 | - | 1 | 1 |
| Wyo. | - | - | - | - | - | 1 | 2 | - | 2 | - | 1 | - | - | - | - |
| Colo. | 7 | - | 2 | - | - | 12 | 17 | - | 8 | - | 33 | 23 | - | - | - |
| N. Mex. | 4 | - | - | - | - | - | 3 | N | N | 2 | 21 | 29 | - | - | - |
| Ariz. | - | - | - | - | - | - | 61 | - | 6 | - | 10 | 48 | - | 1 | 2 |
| Utah | - | - | - | - | - | - | 6 | - | 3 | 6 | 13 | 15 | - | 1 | 1 |
| Nev. | - | - | - | - | - | - | 7 | - | 11 | - | - | 1 | - | 1 | - |
| PACIFIC | 133 | 2 | 76 | - | 8 | 91 | 243 | 3 | 181 | 7 | 203 | 234 | 1 | 56 | 60 |
| Wash. | 13 | - | - | - | - | 10 | 38 | - | 8 | 2 | 22 | 58 | - | - | 6 |
| Oreg. | 3 | - | - | - | - | - | 20 | N | N | - | 3 | 14 | - | 1 | 1 |
| Calif. | 113 | 1 | 65 | - | 3 | 47 | 166 | 2 | 153 | 5 | 168 | 152 | - | 33 | 36 |
| Alaska | - | - | - | - | - | 9 | 11 | - | 5 | - | 3 | 1 | - | 1 | - |
| Hawaii | 4 | 1 | 11 | - | 5 | 25 | 8 | 1 | 15 | - | 7 | 9 | 1 | 21 | 17 |
| Guam | 1 | U | 2 | U | - | 10 | 1 | U | 6 | U | - | - | U | - | 1 |
| P.R. | - | - | 122 | - | - | 244 | 6 | - | 1 | - | 1 | 9 | - | - | - |
| V.I. | - | - | - | - | - | - | - | - | 3 | - | - | - | - | - | - |
| Amer. Samoa | - | - | 1 | - | - | - | - | - | - | - | 2 | 6 | - | - | - |
| C.N.M.I. | - | - | - | - | 1 | - | - | - | 11 | - | - | 1 | - | - | - |

*For measles only, imported cases include both out-of-state and international importations.

N: Not notifiable U: Unavailable † International § Out-of-state

**TABLE II. (Cont'd.) Cases of selected notifiable diseases, United States, weeks ending July 3, 1993, and June 27, 1992 (26th Week)**

| Reporting Area | Syphilis (Primary & Secondary) | | Toxic-Shock Syndrome | Tuberculosis | | Tula-remia | Typhoid Fever | Typhus Fever (Tick-borne) (RMSF) | Rabies, Animal |
|---|---|---|---|---|---|---|---|---|---|
| | Cum. 1993 | Cum. 1992 | Cum. 1993 | Cum. 1993 | Cum. 1992 | Cum. 1993 | Cum. 1993 | Cum. 1993 | Cum. 1993 |
| UNITED STATES | 13,183 | 17,186 | 120 | 9,655 | 10,386 | 55 | 151 | 84 | 3,766 |
| NEW ENGLAND | 220 | 325 | 7 | 207 | 168 | - | 8 | 1 | 483 |
| Maine | 3 | - | 2 | 7 | 13 | - | - | - | - |
| N.H. | 21 | 25 | 2 | 4 | - | - | - | - | 37 |
| Vt. | 1 | 1 | - | 3 | 3 | - | - | - | 18 |
| Mass. | 86 | 156 | 2 | 123 | 74 | - | 6 | 1 | 80 |
| R.I. | 7 | 18 | 1 | 32 | 13 | - | - | - | - |
| Conn. | 102 | 125 | - | 38 | 65 | - | 2 | - | 348 |
| MID. ATLANTIC | 1,251 | 2,427 | 24 | 2,152 | 2,526 | 1 | 44 | 8 | 1,451 |
| Upstate N.Y. | 103 | 206 | 13 | 196 | 311 | 1 | 9 | 1 | 1,096 |
| N.Y. City | 628 | 1,332 | 1 | 1,284 | 1,474 | - | 26 | - | - |
| N.J. | 174 | 333 | - | 348 | 433 | - | 6 | 6 | 210 |
| Pa. | 346 | 556 | 10 | 324 | 308 | - | 3 | 1 | 145 |
| E.N. CENTRAL | 2,118 | 2,531 | 36 | 1,064 | 1,064 | 3 | 14 | 5 | 36 |
| Ohio | 614 | 381 | 15 | 151 | 163 | 1 | 5 | 4 | 4 |
| Ind. | 178 | 121 | 1 | 118 | 87 | 1 | 1 | - | - |
| Ill. | 796 | 1,107 | 5 | 551 | 522 | - | 4 | 1 | 4 |
| Mich. | 330 | 529 | 15 | 218 | 246 | 1 | 4 | - | 2 |
| Wis. | 200 | 393 | - | 46 | 46 | - | - | - | 26 |
| W.N. CENTRAL | 853 | 674 | 9 | 225 | 241 | 16 | 2 | 7 | 187 |
| Minn. | 46 | 44 | 2 | 30 | 60 | - | - | - | 23 |
| Iowa | 32 | 23 | 5 | 24 | 21 | - | - | 1 | 34 |
| Mo. | 679 | 506 | - | 120 | 103 | 6 | 2 | 4 | 5 |
| N. Dak. | - | 1 | - | 2 | 3 | - | - | - | 39 |
| S. Dak. | 1 | - | - | 10 | 14 | 8 | - | 2 | 25 |
| Nebr. | 10 | 19 | - | 10 | 13 | - | - | - | 2 |
| Kans. | 85 | 81 | 2 | 29 | 27 | 2 | - | - | 59 |
| S. ATLANTIC | 3,522 | 4,830 | 13 | 1,741 | 1,985 | 1 | 20 | 30 | 1,043 |
| Del. | 69 | 116 | 1 | 21 | 25 | - | 1 | 1 | 86 |
| Md. | 198 | 359 | - | 188 | 139 | - | 3 | 3 | 309 |
| D.C. | 201 | 216 | - | 85 | 62 | - | - | - | 7 |
| Va. | 310 | 395 | 3 | 217 | 145 | - | 1 | 2 | 189 |
| W. Va. | 5 | 9 | - | 43 | 31 | - | - | - | 44 |
| N.C. | 991 | 1,213 | 3 | 255 | 253 | - | - | 16 | 40 |
| S.C. | 539 | 654 | - | 204 | 214 | - | - | 1 | 84 |
| Ga. | 588 | 979 | - | 380 | 441 | - | 1 | 2 | 242 |
| Fla. | 624 | 889 | 6 | 348 | 675 | 1 | 14 | 5 | 42 |
| E.S. CENTRAL | 1,862 | 2,251 | 4 | 677 | 739 | 3 | 2 | 8 | 47 |
| Ky. | 156 | 72 | 2 | 186 | 199 | - | - | 3 | 8 |
| Tenn. | 529 | 633 | 1 | 144 | 164 | 2 | - | 3 | - |
| Ala. | 406 | 884 | 1 | 237 | 216 | 1 | 2 | - | 39 |
| Miss. | 771 | 662 | - | 110 | 160 | - | - | 2 | - |
| W.S. CENTRAL | 2,755 | 2,957 | 2 | 950 | 934 | 24 | 2 | 23 | 299 |
| Ark. | 464 | 405 | - | 86 | 82 | 13 | - | - | 16 |
| La. | 1,215 | 1,279 | - | - | 87 | - | 1 | 1 | 1 |
| Okla. | 189 | 124 | 2 | 154 | 70 | 8 | - | 22 | 58 |
| Tex. | 887 | 1,069 | - | 710 | 695 | 3 | 1 | - | 224 |
| MOUNTAIN | 115 | 200 | 7 | 233 | 264 | 2 | 5 | 2 | 49 |
| Mont. | 1 | 3 | - | 5 | - | - | - | - | 9 |
| Idaho | - | 1 | 1 | 6 | 12 | - | - | - | 1 |
| Wyo. | 4 | 1 | - | 1 | - | 1 | - | 2 | 6 |
| Colo. | 32 | 28 | 1 | 8 | 30 | - | 4 | - | 1 |
| N. Mex. | 19 | 24 | - | 35 | 39 | - | - | - | 3 |
| Ariz. | 51 | 97 | 1 | 116 | 112 | - | 1 | - | 27 |
| Utah | 3 | 5 | 3 | 11 | 42 | 1 | - | - | - |
| Nev. | 5 | 41 | 1 | 51 | 29 | - | - | - | 2 |
| PACIFIC | 467 | 991 | 18 | 2,566 | 2,465 | 5 | 54 | - | 171 |
| Wash. | 28 | 49 | 2 | 131 | 156 | 1 | 4 | - | - |
| Oreg. | 48 | 25 | - | 53 | 60 | 2 | - | - | - |
| Calif. | 367 | 910 | 16 | 2,244 | 2,093 | 2 | 48 | - | 155 |
| Alaska | 2 | 3 | - | 25 | 36 | - | - | - | 16 |
| Hawaii | 2 | 4 | - | 133 | 120 | - | 2 | - | - |
| Guam | 1 | 2 | - | 28 | 34 | - | - | - | - |
| P.R. | 293 | 164 | - | 93 | 120 | - | - | - | 25 |
| V.I. | 27 | 32 | - | 2 | 3 | - | - | - | - |
| Amer. Samoa | - | - | - | 1 | - | - | - | - | - |
| C.N.M.I. | 3 | 4 | - | 19 | 17 | - | - | - | - |

U: Unavailable

## TABLE III. Deaths in 121 U.S. cities,* week ending July 3, 1993 (26th Week)

| Reporting Area | All Causes, By Age (Years) | | | | | | P&I† Total |
|---|---|---|---|---|---|---|---|
| | All Ages | ≥65 | 45-64 | 25-44 | 1-24 | <1 | |
| NEW ENGLAND | 559 | 375 | 93 | 52 | 19 | 20 | 50 |
| Boston, Mass. | 167 | 105 | 31 | 19 | 5 | 7 | 21 |
| Bridgeport, Conn. | 58 | 35 | 9 | 6 | 3 | 5 | 1 |
| Cambridge, Mass. | 22 | 20 | 1 | - | 1 | - | 2 |
| Fall River, Mass. | 22 | 14 | 4 | 2 | 1 | 1 | - |
| Hartford, Conn. | 49 | 30 | 9 | 5 | 4 | 1 | 4 |
| Lowell, Mass. | 15 | 11 | - | 3 | - | 1 | - |
| Lynn, Mass. | 11 | 8 | 3 | - | - | - | 1 |
| New Bedford, Mass. | 34 | 27 | 5 | 2 | - | - | 4 |
| New Haven, Conn. | 50 | 34 | 8 | 6 | 1 | 1 | 4 |
| Providence, R.I. | U | U | U | U | U | U | U |
| Somerville, Mass. | 2 | 2 | - | - | - | - | - |
| Springfield, Mass. | 46 | 33 | 6 | 4 | - | 3 | 4 |
| Waterbury, Conn. | 26 | 17 | 4 | 4 | - | 1 | - |
| Worcester, Mass. | 57 | 39 | 13 | 1 | 4 | - | 9 |
| MID. ATLANTIC | 2,583 | 1,681 | 501 | 280 | 64 | 58 | 115 |
| Albany, N.Y. | 37 | 23 | 7 | 6 | - | 1 | 2 |
| Allentown, Pa. | 19 | 18 | 1 | - | - | - | 1 |
| Buffalo, N.Y. | 101 | 71 | 20 | 5 | 4 | 1 | 1 |
| Camden, N.J. | 38 | 17 | 6 | 5 | 2 | 8 | 1 |
| Elizabeth, N.J. | 20 | 19 | 1 | - | - | - | - |
| Erie, Pa.§ | 46 | 39 | 5 | - | 1 | 1 | 1 |
| Jersey City, N.J. | 35 | 18 | 6 | 9 | 1 | 1 | - |
| New York City, N.Y. | 1,300 | 822 | 247 | 179 | 30 | 22 | 48 |
| Newark, N.J. | 45 | 18 | 15 | 7 | 2 | 3 | 1 |
| Paterson, N.J. | 32 | 12 | 8 | 6 | 5 | 1 | 6 |
| Philadelphia, Pa. | 496 | 332 | 107 | 39 | 8 | 9 | 37 |
| Pittsburgh, Pa.§ | 64 | 43 | 10 | 6 | 1 | 4 | 5 |
| Reading, Pa. | 14 | 10 | 3 | 1 | - | - | - |
| Rochester, N.Y. | 120 | 88 | 24 | 3 | 2 | 3 | 3 |
| Schenectady, N.Y. | 22 | 17 | 4 | 1 | - | - | - |
| Scranton, Pa.§ | 39 | 27 | 12 | - | - | - | 2 |
| Syracuse, N.Y. | 76 | 54 | 10 | 6 | 5 | 1 | 3 |
| Trenton, N.J. | 37 | 22 | 8 | 5 | 1 | 1 | 2 |
| Utica, N.Y. | 15 | 10 | 4 | 1 | - | - | - |
| Yonkers, N.Y. | 27 | 21 | 3 | 1 | 2 | - | 2 |
| E.N. CENTRAL | 2,051 | 1,263 | 394 | 209 | 124 | 61 | 105 |
| Akron, Ohio | 57 | 39 | 10 | 5 | 2 | 1 | - |
| Canton, Ohio | 31 | 24 | 6 | 1 | - | - | 7 |
| Chicago, Ill. | 399 | 158 | 95 | 72 | 66 | 8 | 12 |
| Cincinnati, Ohio | 194 | 131 | 36 | 12 | 6 | 9 | 19 |
| Cleveland, Ohio | 140 | 84 | 33 | 13 | 4 | 6 | 1 |
| Columbus, Ohio | 136 | 100 | 20 | 8 | 2 | 6 | 3 |
| Dayton, Ohio | 96 | 61 | 22 | 7 | 4 | 2 | 2 |
| Detroit, Mich. | 215 | 126 | 37 | 34 | 12 | 6 | 7 |
| Evansville, Ind. | 37 | 26 | 8 | 2 | - | 1 | - |
| Fort Wayne, Ind. | 56 | 37 | 12 | 4 | 3 | - | 6 |
| Gary, Ind. | 11 | 5 | - | 4 | 2 | - | - |
| Grand Rapids, Mich. | 68 | 40 | 17 | 3 | 5 | 3 | 6 |
| Indianapolis, Ind. | 200 | 128 | 40 | 14 | 7 | 11 | 8 |
| Madison, Wis. | 32 | 21 | 3 | 5 | 1 | 2 | 3 |
| Milwaukee, Wis. | 129 | 91 | 21 | 13 | 2 | 2 | 16 |
| Peoria, Ill. | 42 | 31 | 6 | 1 | 2 | 2 | 7 |
| Rockford, Ill. | 51 | 38 | 7 | 5 | 1 | - | 3 |
| South Bend, Ind. | 32 | 29 | 2 | - | 1 | - | 3 |
| Toledo, Ohio | 63 | 45 | 10 | 3 | 4 | 1 | 2 |
| Youngstown, Ohio | 62 | 49 | 9 | 3 | - | 1 | - |
| W.N. CENTRAL | 778 | 550 | 119 | 62 | 30 | 17 | 31 |
| Des Moines, Iowa | 88 | 64 | 14 | 6 | 3 | 1 | 6 |
| Duluth, Minn. | 38 | 31 | 5 | 1 | 1 | - | 1 |
| Kansas City, Kans. | 47 | 26 | 9 | 7 | 4 | 1 | 1 |
| Kansas City, Mo. | 84 | 62 | 8 | 8 | 4 | 2 | 5 |
| Lincoln, Nebr. | 31 | 23 | 6 | 1 | 1 | - | 1 |
| Minneapolis, Minn. | 151 | 103 | 25 | 13 | 4 | 6 | 7 |
| Omaha, Nebr. | 95 | 62 | 19 | 7 | 2 | 5 | 2 |
| St. Louis, Mo. | 121 | 94 | 14 | 7 | 6 | - | 3 |
| St. Paul, Minn. | 57 | 35 | 12 | 10 | - | - | 5 |
| Wichita, Kans. | 66 | 50 | 7 | 2 | 5 | 2 | - |
| S. ATLANTIC | 922 | 572 | 185 | 107 | 30 | 26 | 30 |
| Atlanta, Ga. | U | U | U | U | U | U | U |
| Baltimore, Md. | 118 | 62 | 27 | 20 | 4 | 5 | 7 |
| Charlotte, N.C. | 110 | 65 | 17 | 16 | 8 | 4 | - |
| Jacksonville, Fla. | 111 | 67 | 27 | 14 | 3 | - | 5 |
| Miami, Fla. | 182 | 121 | 35 | 18 | 5 | 3 | 1 |
| Norfolk, Va. | 47 | 25 | 9 | 5 | 4 | 4 | 2 |
| Richmond, Va. | 76 | 48 | 13 | 7 | 3 | 3 | 5 |
| Savannah, Ga. | 50 | 24 | 13 | 8 | 1 | 4 | 1 |
| St. Petersburg, Fla. | 60 | 47 | 8 | 3 | - | 2 | 4 |
| Tampa, Fla. | 135 | 84 | 32 | 16 | 2 | 1 | 5 |
| Washington, D.C. | U | U | U | U | U | U | U |
| Wilmington, Del. | 33 | 29 | 4 | - | - | - | - |
| E.S. CENTRAL | 553 | 348 | 116 | 53 | 21 | 15 | 22 |
| Birmingham, Ala. | 104 | 58 | 28 | 8 | 7 | 3 | 3 |
| Chattanooga, Tenn. | 58 | 41 | 9 | 5 | 1 | 2 | 2 |
| Knoxville, Tenn. | 88 | 56 | 22 | 9 | 1 | - | 5 |
| Lexington, Ky. | 60 | 40 | 10 | 7 | 1 | 2 | 3 |
| Memphis, Tenn. | 23 | 19 | 1 | 2 | 1 | - | - |
| Mobile, Ala. | 76 | 49 | 12 | 8 | 5 | 2 | 5 |
| Montgomery, Ala. | 47 | 35 | 5 | 6 | 1 | - | 1 |
| Nashville, Tenn. | 97 | 50 | 29 | 8 | 4 | 6 | 3 |
| W.S. CENTRAL | 929 | 598 | 172 | 95 | 37 | 24 | 40 |
| Austin, Tex. | 73 | 54 | 7 | 8 | 3 | 1 | 8 |
| Baton Rouge, La. | 47 | 30 | 10 | 4 | 3 | - | 2 |
| Corpus Christi, Tex. | U | U | U | U | U | U | U |
| Dallas, Tex. | 127 | 73 | 31 | 18 | 2 | 3 | 2 |
| El Paso, Tex. | 77 | 53 | 10 | 8 | 3 | 3 | 7 |
| Ft. Worth, Tex. | 104 | 61 | 20 | 14 | 7 | 2 | 5 |
| Houston, Tex. | U | U | U | U | U | U | U |
| Little Rock, Ark. | 59 | 39 | 14 | 4 | 1 | 1 | 4 |
| New Orleans, La. | 86 | 48 | 18 | 15 | 1 | 1 | - |
| San Antonio, Tex. | 228 | 148 | 39 | 20 | 10 | 11 | 10 |
| Shreveport, La. | 50 | 37 | 8 | 1 | 3 | 1 | - |
| Tulsa, Okla. | 78 | 55 | 15 | 3 | 4 | 1 | 2 |
| MOUNTAIN | 856 | 557 | 172 | 69 | 38 | 20 | 59 |
| Albuquerque, N.M. | 79 | 49 | 18 | 7 | 2 | 3 | 2 |
| Colo. Springs, Colo. | 54 | 36 | 10 | 3 | 3 | 2 | 2 |
| Denver, Colo. | 113 | 73 | 25 | 13 | - | 2 | 16 |
| Las Vegas, Nev. | 164 | 92 | 46 | 16 | 8 | 2 | 3 |
| Ogden, Utah | 31 | 25 | 5 | - | 1 | - | 3 |
| Phoenix, Ariz. | 177 | 109 | 35 | 17 | 9 | 7 | 12 |
| Pueblo, Colo. | 22 | 18 | 2 | 1 | 1 | - | - |
| Salt Lake City, Utah | 88 | 57 | 12 | 6 | 10 | 3 | 11 |
| Tucson, Ariz. | 128 | 98 | 19 | 6 | 4 | 1 | 10 |
| PACIFIC | 1,561 | 1,013 | 278 | 178 | 48 | 42 | 92 |
| Berkeley, Calif. | 15 | 10 | 3 | 2 | - | - | 1 |
| Fresno, Calif. | 77 | 48 | 20 | 5 | 3 | 1 | - |
| Glendale, Calif. | 9 | 7 | 2 | - | - | - | 1 |
| Honolulu, Hawaii | 84 | 53 | 20 | 6 | 3 | 2 | 5 |
| Long Beach, Calif. | 54 | 41 | 4 | 5 | 1 | 3 | 2 |
| Los Angeles, Calif. | 198 | 114 | 39 | 37 | 6 | 1 | 4 |
| Pasadena, Calif. | 23 | 15 | 3 | 3 | 1 | 1 | - |
| Portland, Oreg. | 132 | 85 | 21 | 17 | 3 | 6 | 7 |
| Sacramento, Calif. | 161 | 113 | 23 | 14 | 3 | 8 | 9 |
| San Diego, Calif. | 147 | 89 | 31 | 15 | 10 | 2 | 15 |
| San Francisco, Calif. | 171 | 94 | 37 | 32 | 3 | 4 | - |
| San Jose, Calif. | 166 | 125 | 25 | 10 | 3 | 3 | 23 |
| Santa Cruz, Calif. | 32 | 17 | 7 | 5 | 2 | 1 | 6 |
| Seattle, Wash. | 155 | 101 | 21 | 22 | 4 | 7 | 3 |
| Spokane, Wash. | 50 | 36 | 7 | 1 | 5 | 1 | 6 |
| Tacoma, Wash. | 87 | 65 | 15 | 4 | 1 | 2 | 10 |
| TOTAL | 10,792¶ | 6,957 | 2,030 | 1,105 | 411 | 281 | 544 |

*Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

†Pneumonia and influenza.

§Because of changes in reporting methods in these 3 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

¶Total includes unknown ages.

U: Unavailable.

*Comprehensive Adolescent Health Services — Continued*

Programs providing comprehensive health services to adolescents were identified through a review of publications, mailing lists, adolescent health experts, provider organizations, state and local maternal and child health directors, foundations, and other sources (*3*). A total of 664 such programs were identified nationwide; at least one program was identified in each state except Montana, Nebraska, North Dakota, South Dakota, Vermont, and Wyoming. To assess the validity of the census, local experts reviewed the lists of identified programs in a sample of four states (Kentucky, Maryland, Mississippi, and Washington) and one large metropolitan area (San Francisco); in each area, 85%–90% of all programs had been identified.

A questionnaire was mailed to the director of each of the 664 programs. Of the 435 (66%) programs that responded, 195 (45%) were based in schools, 96 (22%) in hospitals, 48 (11%) in health centers, 39 (9%) in community centers, 35 (8%) in public health departments, and 22 (5%) in other sites. Nonrespondents were equally distributed among geographic regions of the United States. Programs in rural counties were more likely to respond than programs in metropolitan statistical areas (MSAs) (78% versus 67% [$p<0.01$]).

The highest proportion (201 [30%]) of all 664 programs was located in nine northeastern states. Of the 278 programs in urban communities, 83 (30%) were hospital-based programs; 110 (40%), school-based programs; and 10 (4%), health department programs. Of the 115 responding programs in rural communities, 64 (56%) were school-based programs, and 21 (18%) were health department programs.

In 1990, the 435 programs served 605,185 adolescents (median: 720 adolescents per program; range: 13–40,000 adolescents)—approximately 2.5% of the 1990 U.S. adolescent population (24,336,100). These programs reported 2,175,561 patient encounters, for an average of 3.6 visits per adolescent. The ratio of adolescent health programs to the population of adolescents in each state varied widely (Figure 1) (*3*).

A total of 313 (72%) of the programs received federal funding from different sources, including Medicaid, Title V (Maternal and Child Health), Title X (Family Planning), and Title XX (Family Life Programs). In addition, 326 (75%) received state or local government funding, 109 (25%) received state or local health department funding, and 17 (4%) received state education agency funding; 129 (30%) of the programs received private foundation funding.

Almost all programs provided primary health care (396 [91%]), health education (405 [93%]), and HIV-prevention education (409 [94%]); 200 (46%) provided services during evenings, and 91 (21%) provided services during the weekend. Although 187 (43%) programs targeted sexual risk behavior among adolescents, these programs were no more likely than other programs to provide family-planning services (77% versus 70% [$p=0.14$]), contraceptives (62% versus 57% [$p=0.28$]), or HIV-antibody testing (50% versus 43% [$p=0.16$]) on site. Sixty-four (15%) programs targeted services to adolescents infected with HIV; these programs were more likely to provide HIV testing (67% versus 43% [$p<0.01$]) and contraceptives on site (75% versus 56% [$p=0.006$]) than other programs. Programs in health or community centers were more likely to target sexual risk behaviors and adolescents infected with HIV than were programs in other locations.

Although all identified programs had been considered initially to be comprehensive, only 262 (60%) reported that they provided comprehensive services on site. School-based programs were the least likely to provide contraceptive services,

*Comprehensive Adolescent Health Services — Continued*

hospital-based programs were the least likely to provide outreach programs, and health center programs were the least likely to provide mental health services. Programs that considered their services comprehensive were no more likely to provide case management or to have greater coordination of services than were programs that did not consider their services to be comprehensive. Comprehensive programs were more likely to have larger budgets and to receive private foundation funding than were other programs.

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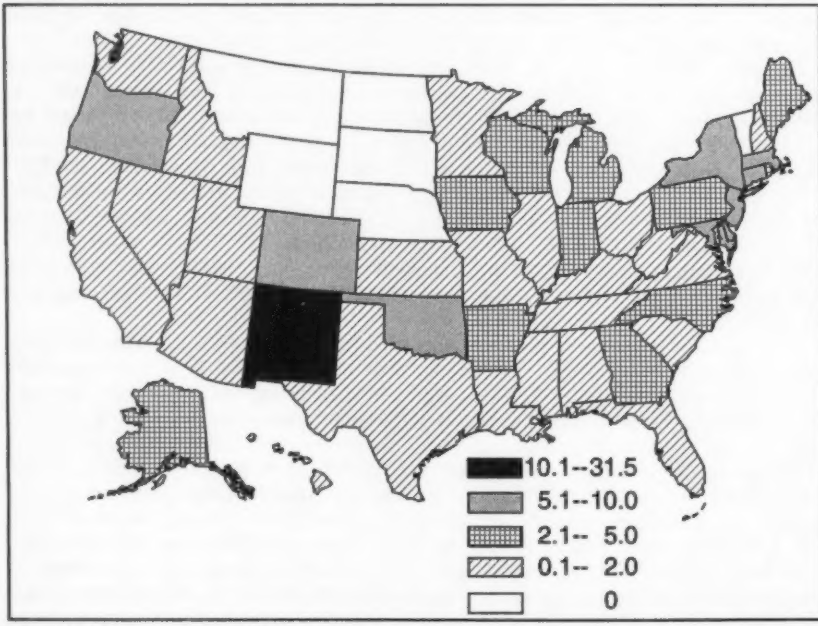
**Editorial Note:** Considerations that are unique to the planning and organization of health services for adolescents include psychosocial development, the need for visible and convenient but confidential services, and the lack of insurance coverage for

**FIGURE 1. Rates* of comprehensive health programs for adolescents — United States, 1990**




*Per 100,000 persons aged 13–19 years.

Source: reference *3*. Adapted with permission.

*Comprehensive Adolescent Health Services — Continued*

recommended preventive care (*4*). A variety of model programs have been implemented to meet the comprehensive health needs of adolescents (*2*); however, only a small proportion of all adolescents are served by these programs and systematic evaluation of such programs has been limited (*2,3*).

The findings in this report indicate that most programs depend on multiple sources of funding, reflecting the categorical nature of funding for adolescent health services. Access to specific services also varies substantially; for example, many programs identified as comprehensive do not provide comprehensive services on site.

Most adolescent health problems, including HIV infection and other sexually transmitted diseases, are preventable (*2*). Preventive service guidelines for adolescents* recommend that confidential health guidance, condoms, and other reproductive-health services be available to youth (*5*); however, the findings in this report indicate that many comprehensive programs, especially school-based programs, do not provide reproductive-health services. Guidelines that address the range of health services that should be provided are needed for programs seeking to deliver comprehensive, coordinated care to adolescents.† More service-delivery programs, stable funding, and better integration of funding and administrative relations among health, education, and other service sectors are also needed if more U.S. adolescents are to have access to appropriate health services.

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*Single copies of *Guidelines for Adolescent Preventive Services* are available without charge from the American Medical Association, Department of Adolescent Health, 515 N. State Street, Chicago, IL 60610; telephone (312) 464-5570.

†Copies of *Comprehensive Adolescent Health Services in the United States, 1990* are available from the Center for Early Adolescence, University of North Carolina at Chapel Hill, CB #8130, Carr Mill Mall, Carrboro, NC 27510; telephone (919) 966-1148; price: $15.50.

*Epidemiologic Notes and Reports*

## *Salmonella* Serotype Tennessee in Powdered Milk Products and Infant Formula — Canada and United States, 1993

Since May 1993, three cases of infection with *Salmonella* serotype Tennessee in infants in Canada and the United States have been linked to consumption of contaminated powdered infant formula. This report summarizes preliminary data on isolation of this organism from powdered milk products and alerts laboratories to the poss ibility that, because this strain may ferment lactose, it may not be identified as *Salmonella*.

Following the isolation of *Salmonella* serotype Tennessee from the stools of two infants in Canada who had consumed Soyalac Powder® infant formula in May, the Food and Drug Administration (FDA) isolated *Salmonella* Tennessee from production equipment at the Minnesota plant where the product had been dried, and from cans of the powdered infant formula. In June 1993, one case of infection with *Salmonella* Tennessee occurred in Illinois in an infant who consumed Soyalac Powder®. From November 4, 1992, through June 29, 1993, 48 cases of infection with *Salmonella* Tennessee have been reported to CDC; when annualized, this number is not substantially different from the mean of 120 cases reported annually from 1981 through 1991.

On June 28, 1993, FDA ordered a recall of all Soyalac Powder® infant formula produced on or after November 4, 1992. FDA has identified additional products that are spray-dried at this plant; these products include Sumacal® medical food supplement, Propac® protein supplement, canned Medibase® medical meal replacement, Kresto Denia® powdered milk, Enercal® diet beverage, Enercal Plus®, and Promil® weaning formula. No cases of illness have been linked to these products. FDA is working with plant officials to determine whether any other products were dried or packaged at this plant during this time. No spray-dried products have been distributed from this plant since June 7, 1993. FDA has requested recall of all products spray-dried at this plant since November 4, 1992. More detailed product information is available from the Division of Emergency and Epidemiological Operations, FDA, telephone (301) 443-1240.

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**Editorial Note:** Outbreaks of salmonellosis caused by powdered milk products have been reported in the United States (*1*) and elsewhere (*2,3*). The isolates of *Salmonella* Tennessee that were identified from the three infants described in this report are atypical of salmonellae because most colonies ferment lactose and, therefore, may not be detected by clinical laboratories that use media or methods that identify salmonellae based on absence of lactose fermentation.

To isolate this organism, plating media that include an indicator of hydrogen sulfide ($H_2S$) production, such as bismuth sulfite (BS) agar, Hektoen enteric (HE) agar, or xylose-lysine-deoxycholate (XLD) agar, should be used. BS does not contain lactose, so typical $H_2S$-producing (black) colonies can be selected from this medium. Both HE

and XLD contain an indicator of $H_2S$ production, as well as lactose; selection of colonies from these media should be based on $H_2S$ production rather than absence of lactose fermentation. At CDC, $H_2S$ production by this strain was detected more easily on HE than on XLD. Use of either BS or HE is recommended for recovery of this strain. XLD agar should be used only if other media are not available.

To screen colonies selected from isolation plates, lysine-iron agar (LIA) is recommended because the reaction produced by lactose-fermenting salmonellae in this medium is typical and because $H_2S$ produced by lactose-fermenting organisms can be detected. Triple sugar iron agar (TSI) or other media that depend on lactose fermentation to identify suspect salmonellae should not be used. $H_2S$ production may not be detected on TSI because of acidic conditions caused by fermentation of lactose. Automated test systems should be used with caution, since lactose-fermenting salmonellae tested at CDC in several such systems were sometimes identified incorrectly. This particular strain was correctly identified as *Salmonella* by the Analytab Products' API 20E®* system.

CDC requests that health-care providers and public health departments continue routine reporting to the *Salmonella* surveillance system; that all *Salmonella* serogroup $C_1$ (of which *Salmonella* Tennessee is a member) isolates be serotyped; that persons infected with *Salmonella* Tennessee be questioned specifically about consumption of powdered milk products or infant formula; and that, until August 15, 1993, new cases of infection with *Salmonella* Tennessee, whether lactose fermenting or nonlactose fermenting, be reported promptly to the state health department.

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*Use of trade names and commercial sources is for identification only and does not imply endorsement by the Public Health Service or the U.S. Department of Health and Human Services.

## *Emerging Infectious Diseases*

# Update: Hantavirus Infection — United States, 1993

An outbreak of respiratory illness associated with hantavirus infection continues to be investigated by state health departments in Arizona, Colorado, New Mexico, and Utah; the Indian Health Service; and CDC, with the assistance of the Navajo Nation Division of Health (*1–4*). This report updates information regarding the outbreak and presents information on a case of unexplained adult respiratory distress syndrome (ARDS) in a person who resided in eastern Texas.

*Hantavirus Infection — Continued*

Laboratory evidence of acute hantavirus infection has been confirmed in 16 patients who had onset of illness from January 1 through June 30, 1993. Of these 16 cases, 11 occurred in New Mexico, four in Arizona, and one in Colorado; 12 occurred among persons aged 20–40 years. Twelve patients have died. Similar illnesses in an additional 25 persons in the four-state area, 10 of whom died, are being investigated for possible hantavirus infection.

In June 1993, a fatal case of ARDS occurred following a prodrome of fever, myalgias, and shortness of breath in a previously healthy 58-year-old woman who lived in eastern Texas. The woman had not traveled outside eastern Texas during the 3 months before her illness. During her hospitalization, diagnostic evaluation, including blood and sputum cultures and a transbronchial lung biopsy, did not reveal the cause of her illness. A serologic test conducted at CDC on a single serum specimen revealed an elevated hantavirus immunoglobulin M enzyme-linked immunosorbent assay titer. The Texas Department of Health and CDC are continuing to investigate this illness by examining clinical materials using additional techniques and seeking evidence of hantavirus infection in rodents in the vicinity.

Except for illnesses in the Texas patient described in this report and in a person who had traveled to the four-state area in 1992 (*4*), no evidence of hantavirus infection has been detected in serologic tests conducted at CDC on specimens from 22 other persons with unexplained ARDS who resided outside the four-state area.

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**Editorial Note:** The findings of the investigation described in this report suggest that acute hantavirus infection occurred in a resident of eastern Texas. This case suggests that ARDS associated with acute hantavirus infection can occur in areas outside the southwestern United States. CDC continues to work with state health departments to investigate cases of unexplained ARDS.

The current outbreak appears to be caused by a newly recognized hantavirus associated with *Peromyscus maniculatus* (deer mouse). Previously, two well-characterized hantaviruses had been isolated from different species in the United States: Seoul virus from *Rattus norvegicus* (Norway rat) and Prospect Hill virus from *Microtus pennsylvanicus* (meadow vole) (*5*). Antibodies reactive with these viruses have been detected in serum specimens from rodents and humans from many areas of the United States (*5*).

A previous report suggests that the prevalence of hantavirus-specific antibodies is low in humans in the United States (*6*). However, examination of the association of hantavirus infection with human disease in the United States has been limited and

*Hantavirus Infection — Continued*

focused on renal disease, which is characteristic of previously described hantavirus syndromes, but not on pulmonary disease, which is characteristic of the syndrome in the current outbreak (*7*). In one recent study, serologic evidence of past hantavirus infection was associated with a diagnosis of hypertensive renal disease (*6*). Additional research is needed to define the distribution and manifestations of hantavirus infections in the United States.

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The *Morbidity and Mortality Weekly Report (MMWR)* Series is prepared by the Centers for Disease Control and Prevention (CDC) and is available on a paid subscription basis from the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402; telephone (202) 783-3238.

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